

Steele (D.A.K.)

Compliments of the Author.

The Microbic Revolution in Surgery.

*An Address Introductory to the Fifth Session of Lectures, in the College of
Physicians and Surgeons, of Chicago, Delivered Sept. 21st, 1886,*

— BY —

D. A. K. STEELE, M. D.,



PROFESSOR OF ORTHOPEDIC SURGERY.

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LADIES AND GENTLEMEN :

Time, in its endless cycle has brought us once again to the beginning of a new course. To-night our doors are opened to admit a fresh class of medical students, many of whom we greet for the first time, and in accordance with a time-honored custom, it is my pleasant duty to welcome them on behalf of the faculty, and to express to them and the many friends of the College who have honored us by their presence to-night our appreciation of the interest they evince in these exercises, which are merely the prelude to the more serious work of the session. To find a suitable subject, not already worn out, for an annual occurrence like the present, is not an easy task; but from the progress made in all directions during the past few years to obtain a higher and better medical education may be adduced a few thoughts of interest to you. Broad education has a vast significance to all growing communities. Superior educational institutions precede and foretell intellectual activity, and are eagerly sought by those who recognize in them the only certain path to substantial knowledge. Man must depend on study, not instinct, for wisdom. Ideas are not innate; we can think correctly only within the circumference of our information, outside of this all is guess work. The less we know the nearer we approach the beasts and birds; the more we know the nearer we approach the plane of angels. The power of man over nature is in proportion to his mental development. The well educated mind looks beyond the mere semblance of things into the higher realm of nature's laws and forces. Confucius wisely said: "Learning without thought is labor lost; thought without learning is perilous." We have advanced far into the transition period separating the true from the false education. "Knowledge," said Webster, "does not comprise all that is contained in the term education. The feelings are to be disciplined, the passions restrained, true and worthy motives inspired, and pure morality inculcated under all circumstances."

The mind of an untutored man may be likened to a taper in the dark, casting feeble rays scarcely an arm's length around. But as he increases in knowledge, as the electric light overpowers and obscures that of a taper, so does that of an highly educated mind enjoy a range of thought and understanding utterly beyond the comprehension of the illiterate. Truly "knowledge is power"—a power that seems almost limitless. The processes of science are necessarily slow, but they are sure. There is no backward movement, the watchword is *advance*. But months and years of patient study and research often pass ere the eager searcher finds the hidden truths. The time has come when a student must be thorough in order to succeed. A full understanding of modern medical methods is indispensable in order to enable a physician to compete on equal footing with his progressive competitor. The active and energetic work of the Illinois State Board of Health, since its organization in 1877, to elevate the standard of the medical profession in the Prairie State, has had much to do in directing the attention of students to colleges whose graduates are fully equipped for their labors in the promotion of health and "for the unending battle with disease and its causes."

The Commissioner of Education in his report for 1882 and 1883, accords a very gratifying recognition of the efforts of this Board by citing the regulation of the practice of medicine in this State as a solution of the "problem of protecting the public without assailing the right of personal medical judgment," and says that under the method of procedure adopted, "it is obvious that men of inferior attainments will be forced to prosecute their studies until they have acquired a sufficient amount of knowledge to satisfy the requirements of the Board; that medical colleges in the State and surrounding commonwealths will be stimulated to increased exertions in order to prepare their students for the ordeal; and that quacks, pretenders, and rascals will be gradually forced out of the State."

We see "Post-graduate Medical Schools" and "Polyclinics" established in all our larger cities—medical weather-vanes indicating the drift of the medical mind—and well patronized by medical graduates; gentlemen who are not satisfied with the acquirements of twenty, ten, or even five years ago; progressive men, ornaments in their chosen calling, having a ceaseless craving for more knowledge, not because some municipality requires it, not in order to reach some definite standard, but simply from the pure love of knowledge. Em-

ulate their example, strive to attain all that is attainable in your quest after learning, and thus be better qualified for the performance of your life work. Study not with the idea of gaining a diploma merely, but of having honestly earned one. "A diploma in the head is worth two in the hand" when it comes to grappling with disease, that hydra-headed monster whose constant assaults on health and life called into existence the science and art of medicine. Absolute perfection is never attained in any of the sciences, the demand always being for more and better work. Medical theories and appliances are sometimes borne on the wave of popular favor for a time, only to sink into oblivion when succeeded by some newer or better belief, to be resuscitated at some future time and rehabilitated for modern use if they contained germs of truth and grains of golden worth; some are forever buried, as the "blue glass craze," and other follies of like nature; these will soon be joined by the present fashionable fad of "Mind cure," "Metaphysical science"—or what you may please to term it,—which is making such serious inroads upon the practice of the followers of Hahnemann.

But these vague and evanescent theories will not stand the test of true science, and must not lead us away from the real advances that are being made by patient, careful, scientific investigators in these departments. "Science is the knowledge of nature and nature's laws." Prof. Parvin, in a scholarly address before the American Medical Association in 1879, used the following beautiful language in discussing philosophical problems in medicine: "For example, if there be a divine being, all-wise and all-powerful, and nature his creation, his name will be recorded on its pages; and to the study of such record the title of natural theology has been given. Moreover man is a part of nature, made of the same material as countless other organisms and subject to the same general laws, so that the science of physical man is a part of the science of nature. A complete knowledge of man therefore includes both science and philosophy. That department of physical science which has for its objects the restoration from disease or injury, the preservation of human health and the prolongation of human life, is the queen of sciences, and in her royal right and in her grand work accepts the services of her handmaids, anatomy, physiology, chemistry and botany, and commands the obedient subtle forces of nature. And yet, if medicine limits its knowledge to that of a mere machine, if its ultimate reason rests in the scalpel, retort, test-

tube and microscope, the whole of man's nature is not comprehended. Will, understanding, reason, conscience, are as surely a part of the human being as muscle and bone, nerve and vessel, liver and lung, brain and heart. Knowledge of the intellectual, of the emotive, and of the moral nature of man, of their laws and manifestations, is just as essential to the thoroughly furnished physician as any knowledge of the merely material organism."

When we consider the marvelous progress made in all departments of science during the last decade; when we consider that we live in an ideal age, an inventive age, an age that will go down to history as the epoch crowning the grandest triumphs of the human mind over matter in the world's history, an epoch that commemorates the utilization of steam as a motive power, of electricity to transmit messages across the continent, and spoken words with distinctness hundreds of miles by means of the telephone; when a mighty motor, blocks away, furnishes the electric spark that illuminates this amphitheatre, need we wonder that medicine and surgery are also making such wonderful progress? It could not be otherwise; we breathe an atmosphere of inquiry and of advancement.

The grandest achievements made in medicine and surgery have been by those who recognize and believe in the germ theory of disease, who believe in micro-organisms as important factors in the development of disease, and who base their treatment upon the recognition and destruction of a particular micro-organism found only in connection with certain diseases. Leeuwenhoeck recognized and described microscopic organisms in putrid water and saliva two hundred years ago. During two centuries these minute beings have engaged the study and discussion of histologists. They have been transferred from the vegetable to the animal kingdom and back again, as they exist upon the very border line; but thanks to the labors of Pasteur, Cohn, Koch, Sternberg, Nageli, Lister, Crookshank, and other patient investigators in the field of bacteriology, a flood of light has been poured upon the subject, and the ever-increasing revelations of the microscope have definitely assigned these microscopic objects to the vegetable kingdom as ranking among the lowest forms of fungi—and the study of the life-history of certain forms has still further elucidated the subject so they are now classified into genera and species.

It is not my intention to weary you with a description of the fifty

odd varieties of these disease-producing parasites, or their life-history; suffice to say they are all included under the general term *microbes*; which simply means a little, living thing. Micrococci, bacteria, bacilli, are only different forms or varieties presenting a distinct family history. Some roundish in shape, some long, short, spiral, flexible, or rigid, but all wonderfully productive; a mass of cellulose, enclosed in a capsule, multiplying by spore formation; and to the microscope and its achievements we trace the history and behavior of these micro-organisms of disease; and in them find an explanation of the causes of the various infectious and epidemic diseases. We no longer depend entirely upon a physical examination of the chest and thoracic organs to determine if a patient is suffering from pulmonary consumption. The modern way is to place a little of the sputum under the microscope, and the detection of the bacillus tuberculosis enables us to form a diagnosis, as its presence is regarded as a distinctive sign of the existence of the disease.

"Big fleas have little fleas
Upon their backs to bite 'em;
And these again have lesser fleas,
And so ad infinitum."

It has been seriously proposed by a French physician to cure consumption by introducing into the system, bacterium *termo*, a micro-organism, that is stated to be antagonistic to the bacillus tuberculosis, on the same principle that you introduce a ferret into a barn to drive out and destroy the rats. It has not been sufficiently proven yet for me to endorse it fully, but you may accept it on trust, as the young lady did the statement that if she ate garlic it would destroy the odor of onions she had inadvertently eaten one evening when she expected her lover; she took the prescription, but lost the usual allotment of kisses.

The recognition of the germ theory of disease is the actual basis of antiseptic surgery and the wonderful advances made in surgery during the last few years, the greatly lessened mortality after major operations, the fact, that reads like a fairy tale, of more than one hundred successive abdominal sections without a single death, the disappearance of hospital gangrene, the infrequency of puerperal fever in our maternity hospitals, and other equally satisfactory achievements can all justly be credited to the teachings and practice of Listerism; for while it is true that Sir Joseph Lister neither was the discoverer of

carbolic acid or the first to demonstrate the effect of microbes in producing fermentation, still he was the originator and elaborator of a system of destroying and preventing the development of micro-organisms in wounds, that no matter how greatly modified since, was based on grand principles that will endure as long as surgery is a branch of the healing art. He has rendered a service to mankind of incalculable value and his name will be honored and revered by surgeons as that of a man to whom posterity owes a debt of gratitude. Of course the practice of antiseptic surgery is based upon a few broad general principles, of which the use of antiseptics or germicides, is but one feature. From the time of Paracelsus' surgeons dreaded the presence of "miasms in the air," or the air itself, on account of its deleterious effects upon wounds; and it was not till Lister enunciated the grand truths of modern antiseptic surgery that any substantial lessening of mortality occurred. The old dread of the air did not contain as many germs of truth as it did of error.

Many of these micro-organisms are aerobic, as the bacterium of chicken cholera for example, and the toxic effects are attributed to the abstraction of oxygen from the blood, and death takes place from asphyxia. Year by year our knowledge of this interesting subject is increasing, until now with a perfect faith in the protecting influence of antiseptics, we undertake the most formidable operations without hesitation, and can positively assure the patient that a large tumor can be removed without pain or suppuration. This is ideal surgery. All you have to do to secure this result is to exclude the microbes and destroy any that may be present during the operation.

Ten years ago in the lying-in department of the magnificent Cook County Hospital across the street, there was rarely a month passed but some poor woman who had successfully passed through the pangs of parturition would have her life again imperiled by the development of child-bed fever. Since the introduction of rigid antiseptic precautions, it is extremely rare to hear of a case of septic infection in the ward, and then only in cases that were infected previous to admission. Tarnier, of Paris, reduced the mortality from puerperal sepsis to one-half of one per cent. since using strict antiseptic precautions. Eight years ago a distinguished medical teacher said in speaking of surgery, "All its great advances might be embraced in two words, anæsthetics and conservatism." To-night, while granting all honor to these two words,

I want to add another, greater than either—antiseptics. Before the advent of anaesthetics, manual skill and dexterity, as evinced in rapidity of operating, was the secret of surgical success. With the discovery of anaesthetics and the resultant abrogation of pain, came greater deliberation and care, and conservatism in surgery came to be recognized as a mark of success and an axiom of surgery. And finally antiseptics completes the trinity of words that have given surgery a grand leading position, and almost, if not quite, placed it among the exact sciences. No one should feel himself qualified to practice surgery until he has gained a thorough knowledge of this subject, and I am proud of the fact that this College affords you the means of pursuing such investigations. The word antiseptics will cause, indeed has already caused, a re-writing of many of our standard surgical text books. The microscope has revealed worlds never dreamed of; multitudinous forms of life with a potency for evil never conceived of, and progressive surgery has deftly turned this knowledge to account, and the result is, lessened human suffering and prolonged life. “Antiseptic methods should be followed because thereby we exclude bacteria from wounds and so avoid putrefaction.” Certainly it is glory enough for one century that by these scientific discoveries and advancements we are enabled to arrest consciousness at will, to withdraw the volition of the suffering patient’s mind from all cognizance of passing events or pain during the performance of the most perilous surgical operations, and that these advancements permit us to restore the wounded parts to as perfect a condition as possible without the development of fever, the presence of pain, or the formation of a drop of pus, and with a scarcely perceptible scar.

In considering the life-history of these little living atoms, we are led to inquire into their origin. Living matter has a certain internal and external form called structure. It occupies a certain position in space and time; it is subject to the operation of certain forces that operate to change or modify its form or surroundings, or it is modified by them, and all these changes cannot be attributed to physico-chemical laws. According to Beale, we must “accept the idea of vital power as being super-physical,” and with that idea its correlate, a living creator of such power.

Says Claude Bernard, “There is a directing idea which is developed and manifested by the organization.” Can it be possible that the laws of chemistry and physiology afford a satisfactory explana-

tion of these various forms of life? Do we not see in them the manifestations of the guiding power and design of a Divine Architect, whose ultimate thoughts and creations are as unknown and unknowable as the abiogenesis of matter itself.

Prof. Swing, Chicago's incarnation of beautiful thoughts and graceful pulpit oratory, says: "Man stands in an environment that has no visible beginning and no visible end. This network possesses the beauty of silk and the strength of iron. * * When he sees the sequences of nature pushing a spring blossom up out of the black soil, he smiles, but when he marks his own hair growing white, and that nature is slowly digging for him a grave in the same ground whence came the violet, the smile gives place to a tear. * * There is a small number of persons who are attempting to find a material world that is capable of making its own phenomena of law and result—a world capable of originating life, speech, thought, memory, love and hope, out of a widely disseminate dust, but the vast majority of the human race find belief in such a theory impossible, and find in the laws of mind and matter the will of an intelligent God."

And now a word to the members of the class. Young gentlemen, you are now at the very threshold of a learned profession, ready and eager to study the grand old science of medicine. Though your progress may seem slow, be not discouraged. Arts may fade, the muse may become dumb, a moral lethargy may lock up the faculties of a nation, anarchy may threaten its very existence, as we of Chicago so sadly knew when we were rudely awakened by the crashing echoes of that fateful bomb last May. The nation itself may pass away and leave only the memory of its existence, but the stores of science it has garnered up will endure forever. We are all students in the vast realms of science, we ever see before us mountain heights to ascend, the summit seems near; we struggle upward impatient to reach it; days, months and years pass, but the highest point is always just beyond. Some of you hail from the broad prairies of our own state, some come from the dells of Wisconsin, others from Indiana's forests, or Missouri's rugged hills, not a few from the Hawkeye State or Minnesota's waving fields. From all directions you come to this modern Athens, impelled by a common impulse, a thirst for knowledge, a desire to explore the storehouses of wisdom and experience. We welcome you as clean-cut, rugged specimens of noble young manhood, untarnished by contact with the moral debasement inci-

dental to all great cities; for it is a fact that where there is a segregation of great masses of humanity, sin and crime and all manner of immorality abound, just as disease and death follow over-crowding in dark, noisome tenement houses. Beautiful flowers require light, air and sunshine to enable nature, that master artist, to bring out all the beauty of coloring and perfection of stamen and pistil, corolla and calyx. So mankind, in order to attain the full mental development that the great All-father intended, must come from the east and west, north and south, mingle together, exchange ideas, gather new ones, and by a process of mental attrition become brighter and wiser. The diamond in its rough state gives little evidence of its intrinsic worth and beauty; it has to go through the hands of the skillful lapidary, be ground and polished and have each facet cut at a proper angle before it attains its greatest possible beauty and value; and yet it retains its individuality, it is the same diamond and contains precisely the same elements chemically that it did before it matched the beauty of its wearer's cheek. Therefore, gentlemen, in the polishing process, in the acquirement of knowledge, in the broadened views you will obtain by contact with more experienced men, never sink your individuality, be not blind followers, but think, act and investigate the grand realm of medical and surgical science for yourselves. Accept no man's dictum for your own until you have proven its truth and worth. Let truth and candor prevail.

There is a homely old adage "That every tub must stand upon its own bottom," and you will find this verified a hundred times before and a thousand times after you have completed the curriculum of this college. Stand for your own worth. Be not cribbers. Let individuality mark your entire career. Aim to stand at the top. When some medical croaker bemoans the over-crowding of the profession, and alleges the practice of medicine is getting unremunerative, remember that the over-crowding is only at one end of the ladder leading to fame. The lower rounds may be crowded somewhat, and a number of young medics, with knowledge oozing from every pore (in their mind), may be unable to gain a foothold on even the first round. But look a little higher; there is plenty of room along about the middle of the ladder, not much crowding there; everybody seems to have room enough to mount safely; and away up on the higher rounds we see the leaders of the profession, secure on their professional perch. Who is there to dispute the claims of Semn, Quine, or

Jackson, or other distinguished names I might mention? Who will question their right to be considered leaders in the medical ranks, in whose footsteps we are content to follow—for the present. Strike out for yourselves and carve a name and fame in some new department of the healing art.

Prof. Waxham, by assiduous attention to intubation of the larynx for the relief of diphtheritic croup, has saved more lives in a single season than any one of our most successful surgeons has been able to do in twenty years by tracheotomy. Let this grand fact stimulate you to work up new methods of saving life.

In regard to remuneration, I confidently make the statement that the medical profession as a class is as well, if not better paid than the legal profession.

Chicago is said to be a very wicked city by certain newspapers, and I presume it is, but I assure you that you will see but little of this alleged wickedness unless you seek it. And I want to tell you, that away back in that old home you left a few days ago there is a mother thinking of you and praying for you, and trusting that her boy—brave, honest, manly fellow that he is—will do nothing to dishonor his spotless manhood.

I trust and believe that you will do nothing to betray her faith, for if there is a profession on the face of the earth that demands ideal purity on the part of her devotees, the medical profession does—you must be pure, noble, scholarly men.

To be a physician implies being a gentleman as well; you must never enter the hallowed precincts of a family in any other garb. You are entrusted not only with the physical, but also often the moral welfare of your patients. You will be made the custodian of family secrets; many a family closet will open and disclose its grimacing skeleton to your gaze. *Never betray these trusts.*

"Each man makes his own stature, builds himself;
Virtue alone outbuilds the pyramids,
Her monuments shall last when Egypt's fall."





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